IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended): A method of analyzing a medical image to ~~arrive at~~determine information concerning a disease that may be evidenced by a lesion in the medical image, the method comprising:

extracting data corresponding to at least one ~~lesion~~ feature of the lesion from the medical image; and

~~arriving at the information concerning the disease, based on non-parametric estimation of the distribution of the feature over the database~~

determining the information concerning the disease, based on non-parametric smoothing of the extracted data over a database of previously stored feature data with one of a fixed or adaptive kernel, K, the adaptive kernel being wider in a region where the extracted data are more sparse, narrower in a region where the extracted data are more dense.

2. (Currently Amended): The method of claim 1, wherein the information comprises at least one from a group including:

a decision on whether a lesion is present in the medical image;

a characterization of a likelihood that the lesion is malignant;

a characterization of a stage of cancer of the lesion;

a characterization of the lesion as being malignant or benign; and

a characterization of a likelihood that a malignancy will develop in the future.

3. (Currently Amended): The method of claim 1, wherein the ~~risk feature~~ extracting data step comprises:

analyzing a surrounding environment of the lesion.

4. (Original): The method of claim 3, wherein the analyzing step comprises:

assessing a parenchymal pattern surrounding the lesion in human breast tissue in a

mammogram constituting the medical image.

5. (Currently Amended): The method of claim 1, wherein the ~~lesion feature~~

~~extraction~~extracting data step comprises:

determining at least one feature from a group of features comprising:

skewness of gray-values,

spiculation,

margin definition,

shape,

density,

homogeneity,

texture,

asymmetry, and

temporal stability.

6. (Currently Amended): A system, comprising: ~~implementing the method of claims~~

~~1, 2, 3, 4 or 5.~~

a data extraction device configured to extract data corresponding to at least one

feature of the lesion from a medical image; and

a processor configured to determine the information concerning the disease, based on

non-parametric smoothing of the extracted data over a database of previously stored feature

data with one of a fixed or adaptive kernel, K, the adaptive kernel being wider in a region

where the extracted data are more sparse, narrower in a region where the extracted data are more dense.

7. (Currently Amended): A computer ~~program~~ readable storage medium containing instructions configured to cause a computing device to execute a method comprising:

extracting data corresponding to at least one feature of the lesion from the medical image; and

determining the information concerning the disease, based on non-parametric smoothing of the extracted data over a database of previously stored feature data with one of a fixed or adaptive kernel, K, the adaptive kernel being wider in a region where the extracted data are more sparse, narrower in a region where the extracted data are more dense.

~~product storing program instructions for execution on a computer system, which when executed by the computer system, cause the computer system to perform the method recited in any one of claims 1, 2, 3, 4 or 5.~~

8.   (New) The method of claim 1, where K is a paraboloid, Gaussian, or Lorentzian kernel.

9.   (New) The method of claim 1, wherein the information comprises an estimate of a probability density function (PDF) of a distribution of the at least one lesion feature over the database, and the PDF is calculated by the mathematical equation

$$PDF(\vec{x}) = \sum_i K(\vec{x} - \vec{x}_i)$$

where $\vec{x}$ represents the extracted data, and $\vec{x}_i$ represents previously stored feature data.